

RECENT COLLECTIONS OF MALLOPHAGA AND
ANOPLURA FROM SOUTHERN CALIFORNIA¹

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Lice have not been collected or adequately studied in many sections of the United States; Southern California is not an exception in this regard.

The biting and sucking lice herein reported were collected from mammals and birds caught during investigations concerned with insecticide studies for the control of ectoparasites under field conditions and studies on *Neotoma*, the host for Triatominae. A limited number of specimens was contributed by friends who knew of our interests in Mallophaga and Anoplura. This material was collected from 1951–1954 in five counties of Southern California: Orange, San Diego, Riverside, San Bernardino, and Inyo Counties; two collections are included which were made a few miles outside the state of California: one in Yavapai County, Arizona, the other in Northern Baja California, Mexico. The collections listed represent several new county, state, and host records.

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The fourth edition (1931) of the *American Ornithological Union's Check List of North American Birds (With Supplements)* was used as the authority for the birds discussed, and the *List of North American Recent Mammals* by Miller and Kellogg (1955) was the taxonomic authority for the mammals. Supplementary works on birds and mammals also used were Allen (1951), Harrison (1955), Hoffman (1927), Hooper (1938), Ingles (1954), and Orr (1940). *The Sucking Lice* by Ferris (1951), and *A Check List of the Genera and Species of Mallophaga* by Hopkins

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and Clay (1952) were found to be valuable references on the sucking and biting lice.

ANOPLURA

Hoplopleuridae:

HOPLOPLEURA ACANTHOPUS (Burmeister, 1839)

Microtus californicus sanctidiegi Kellogg, 1922 (meadow mouse)—*San Juan Capistrano, Orange County, California, September 10, 1951; *Camp Pendleton, Oceanside, San Diego County, California, March 8, 1953; and *Reche Canyon, Riverside County, California, January 6, 1953. Previously reported from *Microtus constrictus* Mendocino City; *M. californicus*, Covelo; and *Microtus* sp., South Yolla Bolly Mt., California (Ferris, 1921).

HOPLOPLEURA HESPEROMYDIS (Osborn, 1891)

Peromyscus maniculatus gambelii (Baird, 1858) (deer mouse)—*Whitney Portal, 13 miles west Lone Pine, Inyo County, California, September 27–30, 1951. Previously reported from Yosemite National Park on *P. maniculatus*; on *Onychomys torridus pulcher*, San Bernardino County; and on *Mus musculus* from Stanford University (Ferris, 1916).

Peromyscus maniculatus sonoriensis (LeConte, 1853) (deer mouse)—*Reche Canyon, Riverside County, October 11, 1951.

Peromyscus boylii rowleyi (Allen, 1893) (brush mouse) — *Reche Canyon, Riverside County, October 12, 1951; and seven miles south Congress Junction, Yavapai County, Arizona, December 17, 1952: Previously reported from California on *Peromyscus boylii* and on *Mus musculus* at Stanford University (Ferris, 1921).

HAEMODIPSUS SETONI Ewing, 1924

Sylvilagus audubonii sanctidiegi (Miller, 1899) (Audubon cottontail rabbit)—*Camp Pendleton, Oceanside, San Diego County, California, August 13 and November 25, 1952; and *Loma Linda, San Bernardino County, California, January 19 and 23, 1953. Previously reported from *Lepus californicus* in California (Ferris, 1932).

POLYPLAX ABSCISA Fahrenholz, 1938

Microtus californicus sanctidiegi Kellogg, 1922 (meadow mouse)—*San Juan Capistrano, Orange County, California, September 10, 1951; *Camp Pendleton, Oceanside, San Diego County, California, March 8, 1953; and *Reche Canyon, Riverside County, California, January 6, 1953. This louse has previously been reported on *Microtus* sp. at South Yolla Bolly Mt., California; *M. californicus* from Marin County, California; and on *M. intermedius* from Nevada (Ferris, 1942).

NEOHAEMATOPINUS LAEVIUSCULUS (Grube, 1851)

Citellus beecheyi beecheyi (Richardson, 1829) (Calif. ground squirrel)—*San Juan Capistrano, Orange County, California, August, 1951–March, 1952; Dana Point, Orange County, California, October, 1951–March, 1952, May–September, 1952, November and December, 1952, and June, 1953; *Camp Pendleton, Oceanside, San Diego County, California, March and April, 1952, and June–November, 1952; and *Corona, Riverside County, California, August, 1952.

Citellus beecheyi parvulus Howell, 1931 (Calif. ground squirrel)—
*Loma Linda, San Bernardino County, California, November, 1951, February
and March, 1952, July–November, 1952, and February, April, May and July,
1953; and *Mt. San Jacinto, Riverside County, California, June, 1952.

N. laeviusculus is at times very abundant on *Citellus beecheyi* during
the spring months; however, the above collection records from 446 hosts
indicate that this louse occurs on ground squirrels in Southern California
throughout all of the year including the hot, dry summer months. This
louse has previously been reported from *C. beecheyi*, *C. b. douglasii*, and
C. beldingi in California (Ferris, 1923).

NEOHAEMATOPINUS NEOTOMAE Ferris, 1942

Neotoma fuscipes simplex True, 1894 (dusky-footed wood-rat)—*Lake
Mathews Canyon, Riverside County, California, December 13, 1951.

Neotoma fuscipes macrotis Thomas, 1893 (dusky-footed wood-rat)—
*Mill Creek Canyon, San Bernardino County, California, March 17 and
26, 1953.

†*Neotoma lepida intermedia* Rhoads, 1894 (desert wood-rat) —
**Reche Canyon, Riverside County, California, January 6, 1953.

Neohaematopinus neotomae has previously been reported from *Neotoma*
albigula at Tucson, Arizona; *Neotoma fuscipes streator* at Monterey, Cali-
fornia; and *Hodomys alleni* at Manzanillo, Mexico (Ferris, 1942).

MALLOPHAGA

Trichodectidae:

TRICHODECTES OSBORNI (Keler, 1944)

†*Spilogale gracilis microrhina* Hall, 1926 (spotted skunk)—*Reche
Canyon, Riverside County, California, October 3, 1951; and *Dana Point,
Orange County, California, October 22, 1952. New host record for this
subspecies.

TRICHODECTES MEPHITIDIS (Packard, 1873)

Mephitis mephitis holzneri Mearns, 1897 (striped skunk)—*San Juan
Capistrano, Orange County, California, October 4, 1951.

TRICHODECTES MINUTUS (Paine, 1912)

Mustela frenata latirostra Hall, 1936 (long-tailed weasel) — *Loma
Linda, San Bernardino County, California, March 25, 1952 and May 17,
1953; and *Camp Pendleton, Oceanside, San Diego County, California,
April 3, 1952.

GEOMYDOECUS CALIFORNICUS (Chapman, 1897)

Thomomys bottae (Eydoux and Gervais, 1836), (botta pocket gopher)
—*Loma Linda, San Bernardino County, California, November 21 and 25,
December 7 and 16, 1951, January 21, March 3, October 14, and December
19, 1952, and January 21–24, 1953; and San Jose, Baja California, Mexico,
November 8, 1953.

Mustela frenata latirostra Hall, 1936 (long-tailed weasel) — *Loma
Linda, San Bernardino County, California, December 6, 1951 and March
24, 1952.

Menoponidae:

COLPOCEPHALUM UNCIFERUM Kellogg, 1896

Pelecanus erythrorhynchos Gmelin, 1789 (white pelican)—*Mentone, San Bernardino County, California, March 17, 1954.

PSEUDOMENOPON PACIFICUM (Kellogg, 1896)

Fulica americana americana Gmelin, 1789 (coot or mud-hen)—*Lakeview, Riverside County, California, December 24, 1953.

PSEUDOMENOPON sp.

Grebe (this host was not identified to species)—*San Juan Capistrano, Orange County, California, November 1, 1951.

DENNYUS sp.

Aeronautes saxatalis saxatalis (Woodhouse, 1853) (white-throated swift)—*Loma Linda, San Bernardino County, California, December 31, 1953. The single specimen collected was a nymph and could not be taken to species.

PIAGETIELLA PERALIS (Leidy, 1878)

Pelecanus erythrorhynchos Gmelin, 1789 (white pelican)—*Mentone, San Bernardino County, California, March 17, 1954.

TRINOTON sp.

Mergus merganser americanus Cassin, 1852 (American merganser duck)—*Mentone, San Bernardino County, California, March 17, 1952.

Anas cyanoptera cyanoptera (Vieillot, 1816) (Cinnamon teal duck)—*Loma Linda, San Bernardino County, California, December 27, 1953.

HOHORSTIELLA LATA (Piaget, 1880)

Columba livia livia Gmelin, 1789 (rock dove or domestic pigeon)—*Loma Linda, San Bernardino County, California, November 29, 1953.

Ricinidae:

RICINUS SUBHASTATUS (Durrant, 1906)

Pipilo fuscus crissalis (Vigors, 1839) (brown towhee)—*San Jose, Baja California, November 6, 1953.

Laemobothriidae:

LAEMOBOTHRION BUTEONIVORUM (Packard, 1872)

Buteo swainsoni Bonaparte, 1838 (Swainson's hawk)—*Loma Linda, San Bernardino County, California, October 12, 1953.

Philopteridae:

ANATICOLA CRASSICORNIS (Scopoli, 1763)

Anas cyanoptera cyanoptera (Vieillot, 1816) (cinnamon teal duck)—*Loma Linda, San Bernardino County, California, December 27, 1953.

ANATICOLA MERGISERRATI (DeGeer, 1778)

†*Mergus merganser americanus* Cassin, 1852 (American merganser duck)—*Mentone, San Bernardino County, California, March 17, 1952. The only North American record of *Anaticola* from mergansers in Wilson's (thesis) record of this species from *Mergus serrator*, in litt. Scanlon.

COLUMBICOLA COLUMBAE (Linnaeus, 1758)

Columba livia livia Gmelin, 1789 (rock dove or domestic pigeon)—*Loma Linda, San Bernardino County, California, September 29, 1953.

AQUANIRMUS AMERICANUS (Kellogg and Chapman, 1899)

Grebe (this host was not identified to species)—*San Juan Capistrano, Orange County, California, November 1, 1951.

STRIGIPHILUS SPEOTYTI (Osborn, 1896)

Speotyto cunicularia hypugaea, Bonaparte, 1825) western burrowing owl)—*Dana Point, Orange County, California, December 17 and 18, 1951.

DEGEERIELLA GIEBELI (Hopkins, 1947)

Buteo jamaicensis calurus Cassin, 1855 (red-tailed hawk) — *Loma Linda, San Bernardino County, California, December 17, 1953.

SUMMARY

The material presented above was collected from 1951–1954 in five counties of Southern California: Orange, San Diego, Riverside, San Bernardino, and Inyo Counties; two collections are included which were made a few miles outside of California: one in Yavapai County, Arizona, the other in Northern Baja California, Mexico. Six species of Anoplura were associated with twelve hosts which constituted nineteen county records, one state record, and one host record. Nineteen species of Mallophaga were associated with twenty-one hosts and comprised twenty-two county records, one state record, and two host records.

LITERATURE CITED

ALLEN, A. A.

1951. Stalking birds with color camera. 1st ed., 328 pp. The National Geographic Society, Washington, D.C.

COMMITTEE OF THE AMERICAN ORNITHOLOGICAL UNION

1931. Check List of North American Birds (With Supplements). 4th ed.

FERRIS, G. F.

1916. Notes on Anoplura and Mallophaga from mammals, with descriptions of four new species and a new variety of Anoplura. *Psyche*. 23(4):97–120.
1921. Contributions toward a monograph of the sucking lice. Stanford University Publications, Biological Sciences. 2(2):59–133.
1923. Contributions toward a monograph of the sucking lice. Stanford University Publications, Biological Sciences. 2(4):183–270.
1932. Contributions toward a monograph of the sucking lice. Stanford University Publications, Biological Sciences. 2(5):271–413.
1942. Some North American, rodent-infesting lice (Insecta: Anoplura) *Microentomology*. 7(3):84–90.
1951. The sucking lice, California Academy of Sciences. *Memoirs Pacific Coast Entomological Society*. 1st ed., vol. 1, 320 pp.

HARRISON, H. H.

1955. American birds in color. 486 pp. Wm. H. Wise & Co., Inc., New York.

HOFFMAN, R.

1927. Birds of the Pacific states. 353 pp. Houghton Mifflin Co., Boston.

HOOPER, E. T.

1938. Geographical variations in wood rats of the species *Neotoma fuscipes*. University of California Press. Univ. Calif. Pub. Zool. 42(4):213-245.

HOPKINS, G. H. E. AND CLAY, T.

1952. A check list of the genera and species of Mallophaga. 1st ed., 362 pp. British Museum Natural History, London.

INGLES, L. G.

1954. Mammals of California and its coastal waters. Rev. ed., 396 pp. Stanford University Press, Stanford.

MILLER, G. S. AND KELLOGG, R.

1955. List of North American recent mammals. 1st ed. 954 pp. Smithsonian Institution, U.S. National Museum Bulletin 205, Washington, D.C.

ORR, R. T.

1940. The rabbits of California. California Academy of Sciences. Occasional Papers of the California Academy of Sciences No. XIX.

† New host record.

* New county record.

** New State record.

LONGEVITY OF SOME ANTHOPHORID BEE LARVAE

(Hymenoptera: Apoidea)

Large collections of anthophorid bee cells containing overwintering larvae have been brought into the laboratory and held for long periods of time. Usually these larvae pupate and emerge at about the same time as those in the field. A few may fail to transform and die after a protracted period in the larval stage. An exception occurred with 10 of 75 larvae of *Melissodes robustior* Cockerell collected near Marsh Creek Canyon, Contra Costa County, California on November 4, 1954. This bee is a fall emerging species and its burrows were located in a layer of moist clay in the bed of an intermittent stream. These cells were kept in pill boxes and were next examined in February, 1957. All but ten had transformed to the adult stage and these ten larvae were removed from their cells and placed in separate pill boxes. All of them pupated in April or early May, 1957 and developed into one male and nine females. (However, only three females became perfect adults with fully expanded wings.) It is apparent that the ability to prolong the resting stage would be of considerable adaptive value to desert-dwelling forms but its significance for this species is not clear.—J. W. MACSWAIN, *University of California, Berkeley*.